COMMENTS/QUALIFIERS ON CORPS OF ENGINEERS updated Flood Damage Reduction System Inspection Report Checklist

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We received from Jay Punia on September 4, 2007 a copy of a letter dated July 27, 2007 and a Flood Damage Reduction System Inspection Report form from Michael D. Mahoney, P.E., Chief, Construction-Operations Division of the U.S. Army Corps of Engineers (USACE), Sacramento District. The letter is addressed to the Reclamation Board and instructs the Board to use the enclosed Flood Damage Reduction System Inspection Report Checklist when performing inspections and writing semi-annual inspection reports. This memo comments on the information and instructions in that package and describes how the Department of Water Resources (DWR) Flood Project Inspection Section (FPIS) will perform its semi-annual inspections and explains where and why our procedures differ from the procedures described in the package from the Corps.

General Comments:
This checklist is a good tool and provides usable inspection criteria for the majority of items to be inspected but does not adequately address our vegetation issues. In addition, it does not consider the conditions and limitations faced by DWR and it requires actions by DWR and the levee maintenance districts that cannot yet be performed. It was designed for use by USACE engineer inspectors and a USACE information management system, neither of which DWR has ever had or used. DWR will continue to perform its duties as it has historically done. Differences between the DWR and USACE programs are described below.

Flood Damage Reduction System Inspection Report
We do not use this form or format. To my knowledge, system boundaries have not been identified. Accordingly, we make an overall Levee Maintaining Agency (LMA) rating rather than an overall system rating. We do not submit a plan view drawing or photos with the report.

Public Sponsor Pre-Inspection Report
Our inspection report will contain the name of the levee system and district and the reporting period (fall 2007). It will not contain information for items 3-8; DWR does not have sufficient resources to gather the changes to or summaries of maintenance required, performed, and planned for each district. This information may be available in the future if planned technical improvements are made in DWR's inspection documentation system. Levee district organization information is available in the Directory of Flood Officials.

General Instructions for the Inspection of Flood Damage Reduction System

A. Purpose of USACE Inspections:

No comments.

B. Types of Inspections:

The semi-annual inspections performed by DWR are Routine Inspections under Continuing Eligibility Inspections.

C. Inspection Boundaries:

DWR has historically inspected and documented conditions within each unit of each district, which would equate to a segment under Inspection Boundaries. This document directs a change to a systems approach but the Flood Project Inspection Section has received no guidance from USACE on how to determine the range, extent, or divisions between the Flood Damage Reduction (FDR) systems we are to inspect. Those with the knowledge to make such determinations and the need to do so can extract the inspection results for the units and districts that make up a given system to establish ratings for that system.

D. Land Use Definitions:

DWR has not established land use definitions for the districts it inspects. Identical inspection criteria are applied to all districts.

E. Use of the Inspection Report Template:

'The report template is intended for use in all Army Corps of Engineers inspections of levee and floodwall systems and flood damage reduction channels' implies that the inspections will be performed by USACE personnel and we infer that those personnel are registered engineers trained in performing the inspections and in evaluating the integrity of the systems they inspect. DWR employs as its levee inspectors Water Resource Technicians who have extensive experience inspecting and maintaining flood damage reduction systems but who are not engineers and have received no training or certification that qualifies them to make determinations about the integrity of the systems. DWR inspectors identify and document maintenance deficiencies and although they report on apparent signs of distress or damage to flood project works, they do not make evaluations on the integrity of the works or its ability to function as designed.

F. Individual Item / Component Ratings:

See E, Use of the Inspection Report Template, above. The rating criteria require the inspector to make determinations of the integrity of the system and its ability to function during future flood events. DWR inspectors are not qualified to make those determinations. DWR inspectors will instead document maintenance deficiencies in the majority of the categories inspected.

G. Overall System Ratings:

DWR cannot apply this table in its determination of overall system ratings. The inspections of over 1,600 miles of levees are performed by six Water Resource

Technicians. The information presented by the inspectors evaluates maintenance performance, not levee integrity. One engineer and one senior engineer are assigned to the Flood Project Inspection Section. It is impossible for us to make an engineering determination of whether Unacceptable maintenance items would prevent the system from performing as intended during the next flood event. All overall system ratings will rate only the overall maintenance performance for the unit and the district being rated. A new methodology for determining overall unit and LMA rating is being used for the fall 2007 inspection. It is based upon the total percentage of unit or LMA miles that are rated Minimally Acceptable (M) or Unacceptable (U) in comparison to threshold levels. For example, an LMA with <10% of its total mileage rated M receives an overall rating of Acceptable (A), with ≥10% but <20% of its total mileage rated M receives an overall rating of M, and with ≥20% of its total mileage rated M receives an overall rating of U. More detailed explanations are supplied in attached documents.

H. Eligibility for PL84-99 Rehabilitation Assistance:
No comments.

I. Reporting:
Earlier comments above apply. The actions required herein of the inspector have not been performed previously by DWR and will not be performed following the fall 2007 inspection. We are not staffed or equipped to provide the information required by items b. through e.

J. Notification:
DWR has as its goal that reports will be provided to all districts and USACE Sacramento within 30 days of the completion of the system-wide summary report of all inspections in the system. The inspection cycle could not start until late September after the release of the Roundtable communiqué. Significant data management and analyses were required to apply the new methodology for overall ratings, delaying release of the inspection results until late March 2008.

RATING GUIDELINES

Levee Embankments
1. Unwanted Vegetation Growth:
The Rating Guidelines contained in the checklist will not be used in the performance of DWR inspections in the near future. DWR believes that the Corps' draft White Paper on Vegetation does not adequately consider all positive and negative effects of vegetation on levees or the environmental impacts that would result from the nearly complete removal of non-grassy vegetation from the levees. A collaborative effort by the Corps of Engineers, the Central Valley Flood Protection Board (formerly the Reclamation Board), DWR, Sacramento Area Flood Control Agency, state and federal resources agencies, and local stakeholders has been undertaken to establish short-term and long-term criteria for vegetation on the California levees and flood control system.

In addition, a Roundtable group consisting of upper management from most of the same agencies and the Corps was created following the August 2007 symposium on levee vegetation to resolve the controversies concerning the removal of nearly all levee vegetation mandated by the Corps' White Paper.

In the absence of specific criteria from the collaborative group or the Roundtable group, DWR has performed its fall 2007 inspections using the criteria below. Minimal densities of vegetation not meeting these criteria will be rated as Minimally Acceptable. Significant densities of vegetation not meeting these criteria will be rated as Unacceptable. Elderberries must meet the same criteria as trees or other vegetation. The criteria:

a) DWR inspectors will evaluate and rate all vegetation within the top 20 feet (slope length) of the waterside hinge point (intersection of crown and slope) and anywhere on the landside slope and within 10 feet of the landside toe. Vegetation beyond 20 feet from the waterside hinge point will not be evaluated or rated at present.
b) Grass and weeds must be maintained at a height of less than 12 inches.
c) Trees must be trimmed at least five feet above the ground or 12 feet above the ground over roadways.
d) Trees must be thinned sufficiently to allow clear visibility and access for flood fight operations.
e) Brush and woody vegetation must be trimmed, thinned, or removed to allow clear visibility and access for flood fight operations.

These criteria closely mirror the vegetation maintenance criteria that have been applied to California's levees since the state and levee maintaining agencies took over responsibility for their maintenance from the Corps of Engineers over a half century ago. They protect levee operability and integrity by requiring open visibility and access to those portions of the levee most susceptible to high water damage while retaining vegetation that has undeniable habitat and environmental value and very likely has a positive effect on levee integrity.

DWR proposes that these criteria remain in place as the short-term criteria. Long-term vegetation criteria will be identified upon the completion of the following:

The Roundtable group will review literature, consult experts, and determine the actual positive and negative effects of all types (especially trees) of levee vegetation, as well as the costs and expected benefits of removing vegetation. The Corps of Engineers will accelerate this effort by presenting its scientific information supporting the removal of vegetation mandated by the White Paper. The Collaborative group will apply for a variance from the Corps of Engineers to maintain levee vegetation in accordance with the criteria identified herein or with other criteria determined by the Collaborative group.

The Department of Water Resources will concurrently proceed with its Statewide Plan of Flood Control and its Floodsafe program to gather and evaluate data on the risks,

likelihood of occurrence, and costs to correct all threats to the integrity of the entire levee system. Risk Assessments will be performed to determine the most cost effective ways to make the greatest improvements to the flood protection system with the limited funding available. The information on vegetation from the Roundtable studies will be included in DWR's risk assessments. The risk assessments are expected to identify the criteria for levee vegetation that will provide the most cost effective protection to the entire levee system.

2. Sod Cover:
As very little sod exists on California levees, these rating guidelines do not apply.

3. Encroachments:
To be rated as Acceptable under these criteria, 'Encroachments have been previously reviewed by the Corps, and it was determined that they do not diminish proper functioning of the levee'. It is unknown how many of the existing encroachments have been previously reviewed and deemed acceptable by USACE. It is unknown how many of the over 18,000 permits issued by the Central Valley Flood Protection Board have been reviewed and accepted by the Corps. There are undoubtedly thousands of permitted encroachments that are not being maintained in strict accordance with permit conditions and thousands more encroachments with no permits. It is currently infeasible to research the administrative condition of each encroachment.

In fall 2007, DWR inspectors evaluated each encroachment under the following criteria:
a. Does it pose a threat to the integrity of the levee? If it's a minor threat, rate it as Minimally Acceptable. If it's a major threat, rate it as Unacceptable and direct the LMA to remove the threat immediately.
b. Does the encroachment have any business being there or does it provide a benefit to anyone? Trash, prunings, and other materials are rated as Minimally Acceptable or Unacceptable according to the seriousness of the encroachment.
c. Most problem encroachments are those that obstruct visibility and/or access. They create many of the same problems as unmaintained vegetation. These encroachments are rated PO for Partially Obstructing or CO for Completely Obstructing. It makes no difference whether it has an encroachment permit or approval from the Corps of Engineers. This will be a very difficult problem to solve as it will involve the forced maintenance or removal of mostly private property, some of which has a permit. Encroachments rated PO or CO are not included in the percentage calculations used to determine overall unit and LMA ratings.

Rated Items 4 through 11, 14 & 15:
These criteria are used by DWR in evaluating and rating levee conditions.

12 & 13. Riprap Revetments & Bank Protection, Revetments other than Riprap:
Inspectors will rate riprap in accordance with the rating guidelines but will be instructed to ignore the presence of vegetation greater than 20 feet (slope length) from the waterside hinge point. See 1. Unwanted Vegetation Growth, above.